

ENERGY CONSERVATION TECHNICAL ASSISTANCE UPDATE



January 2014 through December 2014

Illinois Department of Commerce and Economic Opportunity

Illinois Energy & Recycling Office

500 East Monroe

Springfield, Illinois 62701



**Illinois
Department of Commerce
& Economic Opportunity**

Bruce Rauner, Governor

Executive Summary

By Illinois law, the Department of Commerce and Economic Opportunity (Department or DCEO) is required to provide technical assistance to local governments, to help them save energy and taxpayer dollars with energy efficiency. During 2014, the Department fulfilled this mandate, by assisting units of government and other stakeholders, through its Energy Efficiency Portfolio Standard programs, referred to as Illinois Energy Now. These programs include Energy Performance Contracting; Energy Code Training, Education and Technical Assistance; and the Smart Energy Design Assistance Center. In addition, grants to three organizations provided further opportunities for technical assistance to local governments through the Trade Ally program, Application Outreach program, and Metropolitan Mayors' Caucus Aggregation program. Some of the highlights include:

Energy Performance Contracting Program

Energy Savings Performance Contracting (ESPC) is a budget-neutral approach to make building improvements that reduce energy and water use and increase operational efficiency. By partnering with an energy service company (ESCO), a facility owner can use an ESPC to pay for today's facility upgrades with tomorrow's energy savings—without tapping into capital budgets.

For over 15 years, the Energy Performance Contracting Program has provided assistance to the public and not-for-profit sectors in Illinois, to help them take advantage of the ESPCs. During this time, program staff oversaw the implementation of over \$491 million in energy efficient capital improvements through performance contract arrangements, resulting in over \$35 million in combined annual savings.

In 2014, DCEO worked on large ESPCs and project development with the City of Chicago, Cook County (Phase 2 Project), Metropolitan Wastewater Reclamation District, Chicago Transit Authority, Central Management Services, City of Decatur, and University of Illinois campuses at Champaign and Chicago, Northern Illinois University and Western Illinois University, and Illinois Institute of Technology. Several smaller projects including: school districts in Shelbyville, Rich Township High School, Park Ridge, and McHenry/Kane County consolidated district; housing authorities in Cook County, Rockford, Rock Island, McDonough County, and Decatur; and villages and cities like Buffalo Grove, Dixon, Oak Park, Orland Park, Palatine, and Glenview.

Energy Code Building Industry Training and Education Program

Energy codes and standards set minimum efficiency requirements for new and renovated buildings, assuring reductions in energy use and emissions over the life of the building. Energy codes are a subset of building codes, which establish baseline requirements and govern

building construction. In 2012 alone, building energy codes saved the U.S. an estimated \$5 billion on consumers' energy bills.

Energy codes, like building codes, are adopted at the state and then local level, and Illinois' code is called the Illinois Energy Conservation Code. This Code is periodically updated, most recently at the end of 2012, effective at the beginning of 2013. The Department provides training and education to the implementers of these codes – homebuilders, general contractors, architects, engineers, code officials, HVAC specialists, realtors, and home performance professionals – to ensure that they effectively apply the latest code, for new construction, additions and renovation projects in Illinois.

During 2014, DCEO partnered with International Energy Conservation Consultants, LLC (IECC_LLC), to hold 46 events, training 1,151 state and local code officials, engineers, architects, builders, home energy raters and HVAC contractors on the Illinois Energy Conservation Code. In addition, five training and field-inspection workshops were provided to non-investor-owned utility communities. Further, the Department provided code-related technical assistance in the form of: 476 total code interpretations, speaking engagements at 10 stakeholder workshops, seven strategic consulting sessions to municipalities across the state, and six consulting sessions to the City of Chicago (which is undergoing a major overhaul to its local energy code).

Smart Energy Design Assistance Center (SEDAC)

The Smart Energy Design Assistance Center provides advice and analysis enabling public and private facilities, in the State of Illinois, to increase their economic viability through the efficient use of energy resources. During 2014, SEDAC provided multiple services to local governments:

- SEDAC provided 493 energy conservation technical assistance services to local government clients. 205 of those local government clients initially received quick technical assistance in response to an inquiry via telephone, email, or SEDAC application. SEDAC completed energy assessments for 160 local government buildings, with 80 receiving additional cost analysis and energy modeling services. Energy assessments inform local governments to take immediate action and plan future investments to reduce energy usage and costs associated with their buildings through recommendations based on the analysis of the building structure, equipment, and usage. 48 local government projects received follow up implementation assistance.
- SEDAC provided 76 Retro-commissioning (RCx) services to local governments in Illinois. Retro-commissioning analyses use a systematic process to analyze existing building operating systems to identify low-cost and no-cost operational improvements that increase occupant comfort and save energy in existing buildings. SEDAC completed RCx

plans and began ongoing implementation assistance for 24 local government buildings. SEDAC continued ongoing implementation assistance and verification for 27 RCx clients. SEDAC also began work on 14 new RCx projects. SEDAC completed Mini-Retro-commissioning services for eight local government buildings, and provided dashboard energy monitoring services for six local governments.

- SEDAC also conducted a variety of outreach and training events discussing topics such as opportunities for energy efficiency savings in existing buildings, high performance design for new public sector buildings and state programs to support energy savings efforts. SEDAC presented nine workshops and 31 additional presentations and trainings to an estimated 1,600 local government attendees and representatives.

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INTRODUCTION

The Energy Conservation Act (20 ILCS 1115) was signed into law September 1979. The law requires that the Department provide technical assistance in the development of thermal efficiency standards and lighting efficiency standards to units of local government, upon request by such unit. The law also states that the Department shall provide technical assistance in the development of a program for energy efficiency in procurement to units of local government, upon request by such unit. Ultimately the goals of these mandates are to help local governments and their residents save energy and money, by making their buildings more energy efficient. By providing technical assistance – in the form of outreach, education and training, and one-on-one assistance – the Department is able to ensure that industry professionals are aware of the benefits of energy efficiency and have the technical information they need to effectively implement cost-saving strategies. These goals complement and are in line with related energy efficiency mandates the Department must meet, under the State’s Public Utilities Act Energy Efficiency Portfolio Standards (220 ILCS 5).

In 2014, the Department fulfilled its mandate to provide energy efficiency technical assistance, by assisting units of government and other stakeholders, through its Energy Efficiency Portfolio Standard programs, referred to as Illinois Energy Now. These programs include Energy Performance Contracting; Energy Code Training, Education and Technical Assistance; and the Smart Energy Design Assistance Center. In addition, grants to three organizations provided further opportunities for technical assistance to local governments through the Trade Ally program, Application Outreach program, and Metropolitan Mayors’ Caucus Aggregation program.

The technical assistance programs provided by the Department are supported largely by Energy Efficiency Portfolio Standard Funds, which are received annually, by law from the State’s investor-owned utilities. These programs are also supported in part by the State’s Energy Efficiency Trust Fund

PROGRAM OVERVIEWS

ENERGY PERFORMANCE CONTRACTING PROGRAM

Energy Performance Contracting is an innovative arrangement for designing, installing and financing energy improvements, where the savings achieved by the project are guaranteed to amortize the cost of the project over the term of the agreement. Energy performance contracts provide a practical means to fund many types of building improvements, including:

new lighting technologies, high-efficiency boilers and chillers, and energy management controls. Under an energy performance contract an agreement is made with a private energy service company (ESCO) that will identify and evaluate energy-saving opportunities and then recommend a package of improvements to be paid for through savings. To ensure savings, the ESCO offers staff training and long-term maintenance services. Additionally, the ESCO will guarantee that project savings meet or exceed annual payments and cover all project costs. Energy performance contracts are typically 10-20 years in length, are adaptable to site specific needs, and are best suited for facilities that have the following characteristics:

- Annual utility cost in excess of \$100,000,
- Stable use of the facility for the next five to ten years,
- Minimal availability of funds for energy related capital improvements, and
- Have accomplished minimal energy efficiency upgrades over the past ten years.

Through the Department's Energy Performance Contracting Program, assistance is provided to units of state and local government, schools, and not-for profit organizations, to promote the use of energy performance contracting. Services provided by the Department include:

- Competitive Procurement Process
- Comparative Evaluation Methodology
- Review and analysis of ESCO proposals
- Technical Review of Project Audits and Scope
- Review and comment on Basic Contract Documents
- Advice on Contract Negotiations
- Assistance on Evaluating Project Financing Options
- Review of Project Performance Based on Measured Savings

For over fifteen years, the Energy Performance Contracting Program has provided assistance to the public and non-profit sectors. During this time, program staff and consultant oversaw the implementation of about \$491 million in energy efficient capital improvements through performance contract arrangements resulting in over \$35 million in combined annual savings.

Over 1,372 hours of technical assistance was provided in 2014 to 27 local governments, schools, universities, housing authorities and not-for-profit entities seeking assistance with considering or implementing an energy performance contracting.

Three energy performance contract projects with a total project cost of over \$64 million were completed in 2014, and are now in the "Measurement & Verification of Savings" stage of the process. These projects are expected to save over \$ 4.1 million annually. Three additional projects with a total project cost of over \$87 million are over 50% construction complete with

total annual savings of \$4.7 million.

BUILDING ENERGY CODES PROGRAM

The Department is required under the [Energy Efficient Building Act \(20 ILCS/3125\)](#) to provide training and technical assistance on the Illinois Energy Conservation Code, for both commercial and residential buildings. Energy codes and standards set minimum efficiency requirements for new and renovated buildings, assuring reductions in energy use and emissions over the life of the building. Energy codes are a subset of building codes, which establish baseline requirements and govern building construction. In 2012 alone, building energy codes saved the U.S. an estimated \$5 billion on consumers' energy bills.

Energy codes, like building codes, are adopted at the state and then local level, and Illinois' code is called the Illinois Energy Conservation Code. This Code is periodically updated, most recently at the end of 2012, when the Administrative Rules to adopt the 2012 *International Energy Conservation Code*, with amendments, as Illinois Energy Conservation Code, were approved by the Joint Committee on Administrative Rules. On January 1, 2013, Illinois became the first state to begin enforcing the 2012 IECC (as amended). The Department provides training, education, and technical assistance to the implementers of these codes – homebuilders, general contractors, architects, engineers, code officials, HVAC specialists, realtors, and home performance professionals. Through the Building Industry Training and Education Program and the Code Technical Assistance Program, the Department helps local governments ensure that the latest code is effectively applied, for new construction, additions and renovation projects in Illinois. Most of this work is performed under Illinois Energy Now, with some additional minimal support from the Department's Energy Efficiency Trust Fund.

For its training and education efforts, in 2014, the Department focused specifically on maintaining energy codes momentum attained during 2012 and 2013, while improving upon and diversifying instructional topic centers. For instance, "basic code awareness" and "HVAC sizing fundamentals" events were offered again in shorter, "half-day" builder and contractor formats, to draw more from the construction trades. Additional topics included "Evaluating and Submitting REM/rate Designs for Compliance Assessment," and teaching commercial energy modeling as a game, founded in part upon the paper, "[Learning by Playing – Teaching Energy Simulation as a Game](#)," work developed by the Department of Architecture, Graduate School of Design, Harvard University. The Department's newest educational opportunity is, "Energy Modeling to Code Using OpenStudio, FREE!" Based on the success of last year's "Learning by Playing!" events, this workshop trains architects, engineers, and code officials on how to use the Department of Energy's FREE "open-source" energy modeling tools, OpenStudio and

EnergyPlus, to submit code-compliant energy modeling reports in an interactive computer-classroom environment.

Overall, in 2014, DCEO partnered with IECC_LLC to hold 46 events, training 1,151 industry professionals. Of the 46 total events, thirteen trainings were held for 305 Illinois heating and air-conditioning contractors and code enforcement officials on ACCA Manuals 'J', 'S', and 'D' to improve right-sizing of home heating and air-conditioning equipment in residential buildings. In addition, five training and field-inspection workshops were provided to non-investor-owned utility communities of Danville, Greenville, Moline, Princeton, and Rock Island, totaling 125 additional participants, made possible by an Energy Efficiency Trust Fund Grant. The Department also participated in outreach speaking engagements at 10 workshops, sponsored by groups including: Chicago Roofing Contractors Association, Illinois Plumbing Inspectors Association, Metro Decatur Homebuilders Association, Peoria Homebuilders Association, Chicago Council on High-Rise Buildings, Greening the Heartland 2014, and 100th Annual Illinois Municipal League Conference.

Through IECC_LLC, the Department also provided one-on-one code-related technical assistance, in 2014, including:

- 476 total code interpretations (310 written letters/e-mails and 166 verbal/telephone responses) during the 2014 calendar year;
- Seven strategic consulting sessions to circuit municipalities across the state; and
- Six consulting sessions specifically with the City of Chicago's Department of Buildings, Office of Regulatory Review, for the development of the City's municipal energy code adoption ordinance.

SMART ENERGY DESIGN ASSISTANCE CENTER

The Smart Energy Design Assistance Center (SEDAC) provides advice and analysis enabling private and public facilities, in the State of Illinois, to increase their economic viability through the efficient use of energy resources. SEDAC is sponsored by the Department, in partnership with investor owned utilities, to provide valuable services at no cost to public facilities, as well as to businesses and nonprofit organizations. SEDAC is managed by the Department of Urban and Regional Planning, at the University of Illinois at Urbana-Champaign, and operates as a public-private partnership, in collaboration with the 360 Energy Group, along with other energy entities across the state.

SEDAC was started in 2004, targeting small business energy opportunities. In June 2008, under the Illinois Energy Efficiency Portfolio Standard (EEPS), SEDAC services were expanded to include public entities in Ameren Illinois and ComEd electric delivery territories. In June 2011,

public entities in Ameren Illinois Gas, Nicor Gas, North Shore Gas, and Peoples Gas delivery service territories were added.

During 2014, SEDAC provided 493 energy conservation technical assistance services to local government clients. 205 local government clients initially received quick advice technical assistance services, in response to an inquiry via telephone, email, or SEDAC application. Among these clients, SEDAC completed energy assessments for 160 local government buildings. These energy assessment services provide recommendations for improving energy efficiency specific to the local government building. Most are based on a site visit and include quantified energy and cost savings. Eighty local government clients received additional energy cost analysis and energy savings modeling services. In 2014, SEDAC identified potential annual energy savings from quantified energy reduction measures of 231,459 MBtu (1,354,517 therms and 28,138,026 kWh) with potential annual cost savings of \$2,896,858 annually. SEDAC also provided follow up implementation assistance to 48 local governments. This service moves beyond the identification of appropriate energy savings measures to additional technical assistance needed for implementing the energy savings measures.

In 2014, SEDAC also provided retro-commissioning (RCx) services. SEDAC offers RCx guidance, by identifying quick payback measures (payback of 18 months or less) to improve the control, scheduling, and operation of energy-consuming systems to match the current functional requirements of a building. The end result is significant energy and demand savings, and in many cases, improved occupant comfort and productivity. In 2014, SEDAC completed retro-commissioning plans and began ongoing implementation assistance for 24 local government buildings. For these local government clients, SEDAC identified 97,967 MBtu (638,073 therms and 10,011,617 kWh) in estimated annual energy savings and \$1,024,100 in estimated annual cost savings for quick-payback RCx measures. SEDAC continued ongoing implementation assistance and verification for 27 RCx clients. In addition, SEDAC began work on 11 new RCx projects. SEDAC also conducted mini-retro-commissioning (Mini-RCx) services for eight local government buildings. Mini-RCx projects are structured to provide relatively quick review of two major RCx recommendation areas: scheduling and setpoints. These projects are targeted to buildings that would not qualify for the regular RCx service because of building size or equipment. SEDAC identified 13,247 MBtu (92,557 therms and 1,169,850 kWh) in estimated potential annual energy savings and \$157,477 in estimated annual cost savings for these projects. SEDAC also piloted a project installing and monitoring energy dashboard for RCx clients, with installation complete or partially complete for six local government projects in 2014. After installation, SEDAC continued to provide dashboard monitoring services to identify ongoing energy conservation opportunities.

In addition to direct technical assistance to local governments focused on their specific buildings, SEDAC also provided workshops and other outreach activities on energy efficiency to local governments throughout the state. In 2014, SEDAC conducted nine workshops targeted to Illinois local governments and other building managers covering energy efficiency topics including energy-savings strategies in existing buildings, energy savings strategies for new construction, and energy efficiency implementation and management strategies. SEDAC also conducted 31 additional presentations and trainings to local government attendees and others on energy efficiency topics.

OTHER ILLINOIS ENERGY NOW PROGRAMS

Grants to three organizations under the DCEO Illinois Energy Now programs provide additional opportunities for local governments in Illinois to receive technical assistance on energy efficiency. Each is briefly described below.

Illinois Energy Now Trade Ally Program

The DCEO Illinois Energy Now Trade Ally Program has been created for the benefit of Trade Ally partners and their clients, forging connections that can lead to increased energy savings through the DCEO incentives. Trade Allies are general contractors, lighting contractors, HVAC contractors, engineers, architects, energy service companies, and energy-saving product wholesalers, distributors and retailers who are trained on the Program to deliver more cost-effective energy efficient building solutions to their public sector clients. Through a series of workshops, webinars, trade shows and rallies, they are fully trained on the portfolio of energy efficiency programs and develop a solid understanding of program rules and procedures. With ongoing support and guidance from staff and engineers, DCEO Trade Allies can help their clients navigate the incentive process, including completing DCEO incentive applications.

Unlike trade ally programs offered through public utilities, the DCEO Trade Ally Program is designed exclusively for industry professionals working with local government and other public sector clients. The participation of over 450 active Trade Allies has increased the number of applications to the Illinois Energy Now Program and thus has helped DCEO achieve its EEPS goals.

Illinois Association of County Board Members

Under this project, the Illinois Association of County Board Members (IACBM) assists units of local governments, along with seven regional planning agencies, to participate in the Illinois Energy Now incentive programs. Specifically, IACBM markets the programs to hard-to-reach audiences, focusing on smaller municipalities across the state, and assists those communities in obtaining energy audits and in maneuvering the application process. IACBM also continues to

expand and maintain an on-line energy efficiency toolkit that provides units of local government with energy efficiency facts sheets, energy planning guidance and IEN case studies. IACBM's work focuses on governments within the Ameren, ComEd, and NICOR utility territories.

Metropolitan Mayors' Caucus

Under the Department's Energy Efficiency Aggregation Program, the Metropolitan Mayors' Caucus (MMC) has assisted units of local government in the metropolitan Chicago area take advantage of Illinois Energy Now financial incentives. MMC, in partnership with 360 Energy Group, is identifying, qualifying, and assisting many of its 273 local government members in implementing energy efficiency projects. These projects include lighting and other fast turnaround measures (e.g., HVAC, controls) in the ComEd territory and thermal efficiency projects for North Shore, Peoples, and NICOR gas delivery customers. In 2014, the program helped 68 communities (41% increase from 2013) take advantage of Illinois Energy Now grants and rebates that led to savings of 8,482,055 kWh (70% increase), 602,042 therms (77% increase) and \$1,177,258 (94% increase) in energy costs.

LOOKING AHEAD & SUMMARY

In the year to come, DCEO plans to continue supporting local governments with energy efficiency technical assistance, and its efforts to comply with Energy Conservation Act mandates will continue to be coordinated with its Energy Efficiency Portfolio Standard mandates. The Department's assistance will maintain its focus on high impact areas like ESPC, codes, and design assistance, as well as other potential areas where there may be gaps and opportunities. Resource distribution in these areas will be based on an assessment of relative program success and areas where the greatest impacts are being seen in terms of assistance ultimately resulting in actual savings. The Department is pleased to be able to offer a range of energy efficiency assistance, to ensure that Illinois local governments have the technical tools they need to save money by saving energy.